



Crush Grind Mills



Crush Grind Shaft

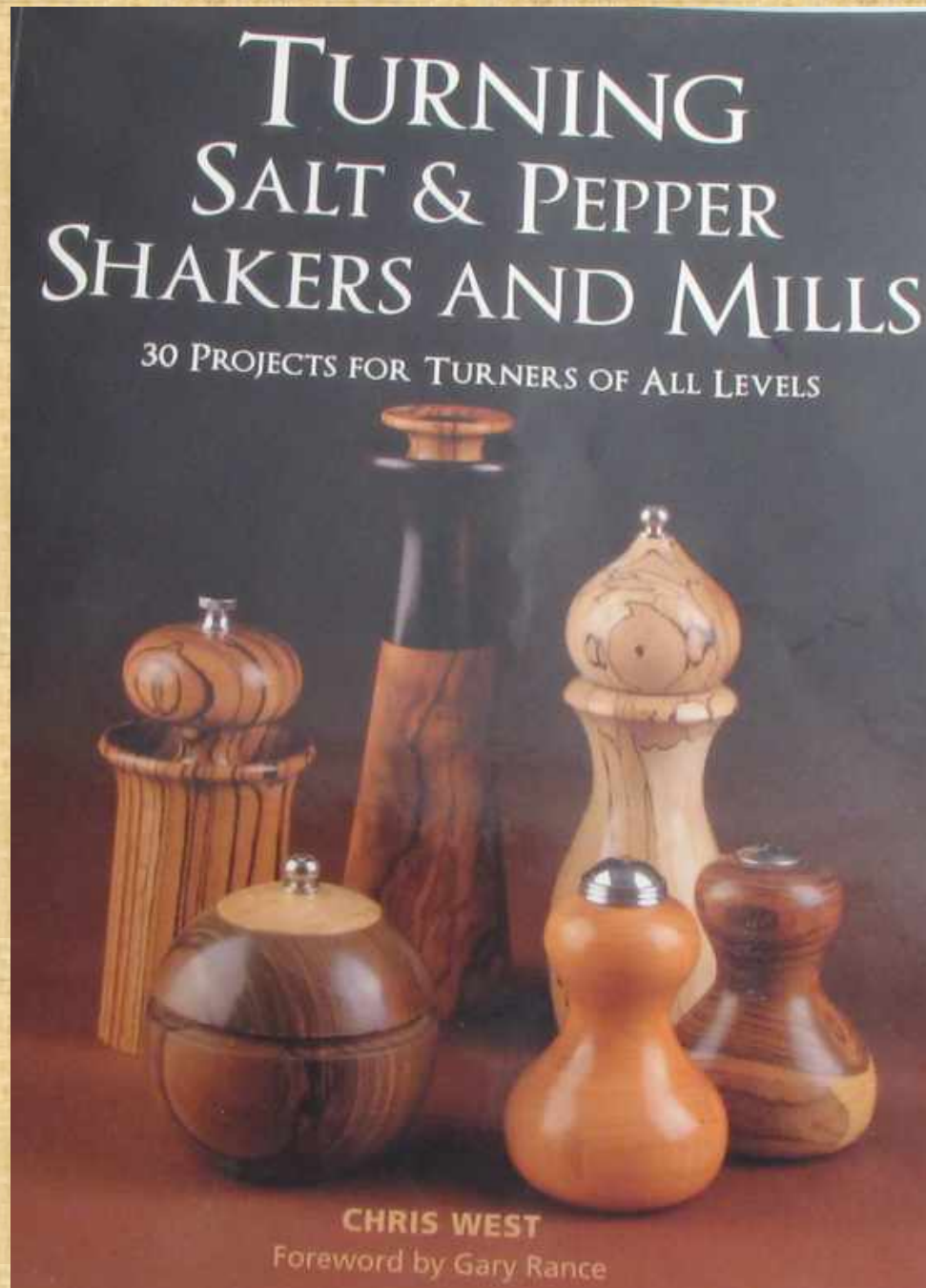


Crush Grind Wood

Why Crush Grind

- More design opportunities
- Grinds pepper, salt or spices
- Better control of grind
- Easier adjustment of grind

Resource



Tools



Small expansion Jaws

Pin Jaws

2 inch Jaws



1 3/4
1 1/2
1 1/4
Body

7/8
1/2
Top



Jacobs Chuck

Tools Cont.



Chuck capable of compression on 1 ¼ tenon (spigot)

Recess Tools



Sorby



Home Made

Other tools



Cone Center



Wooden Jam Chucks

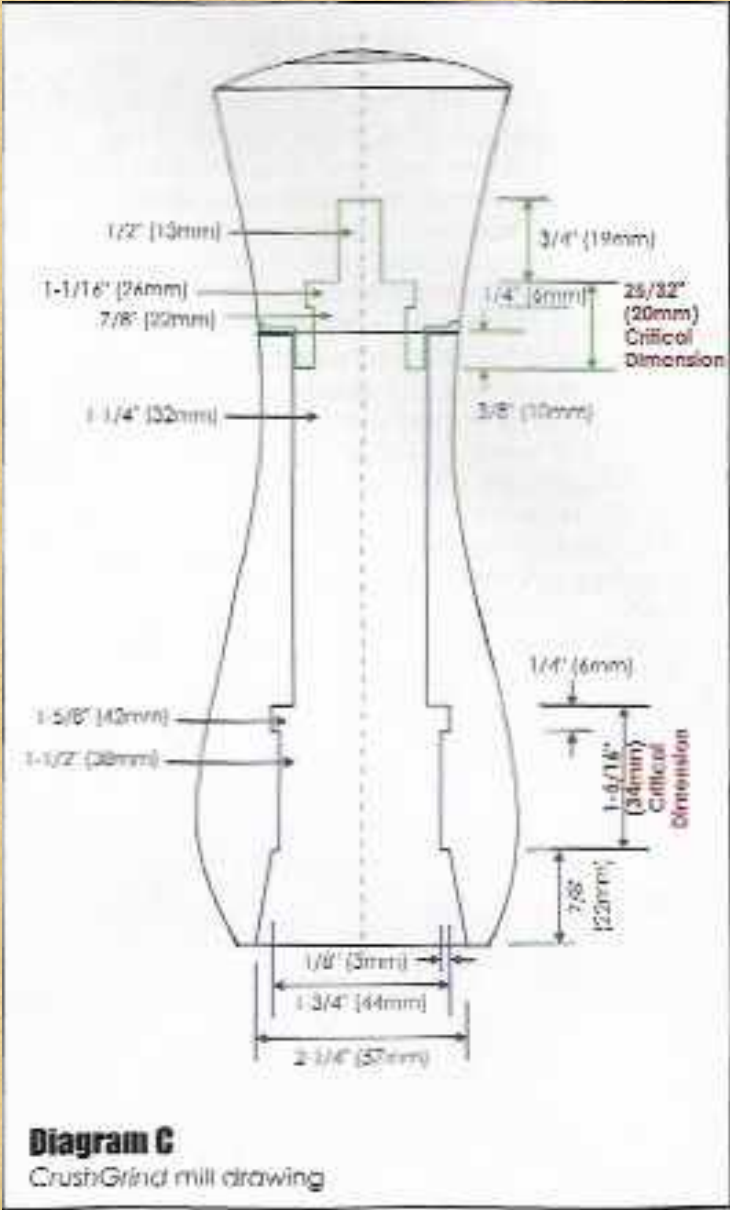
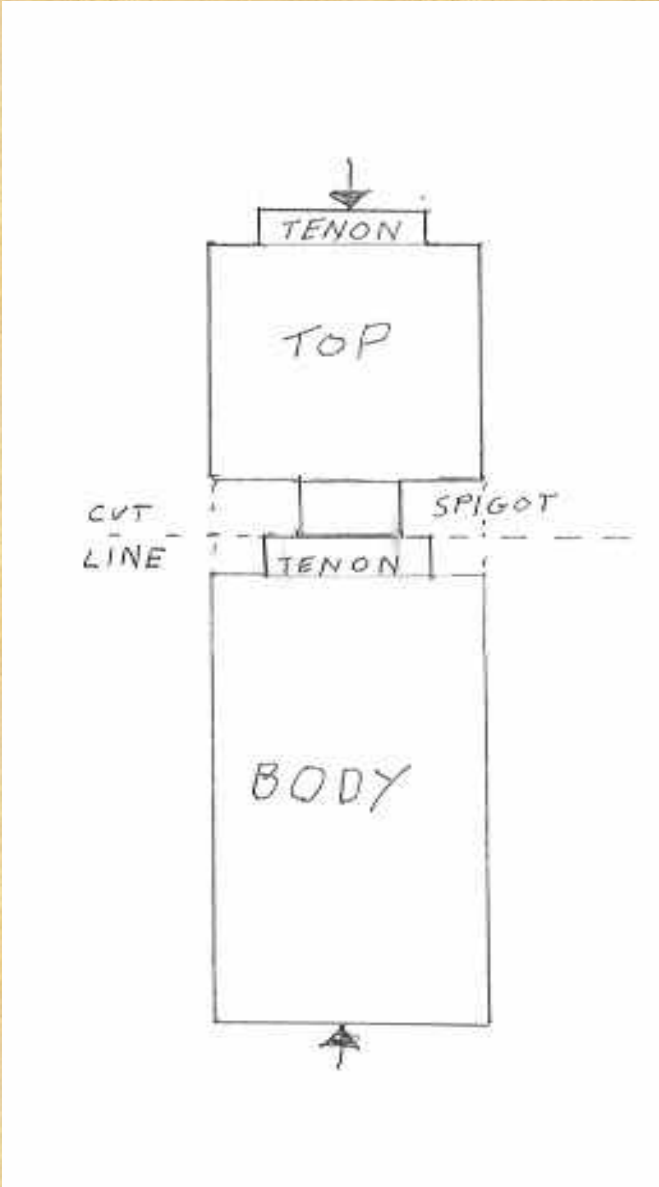
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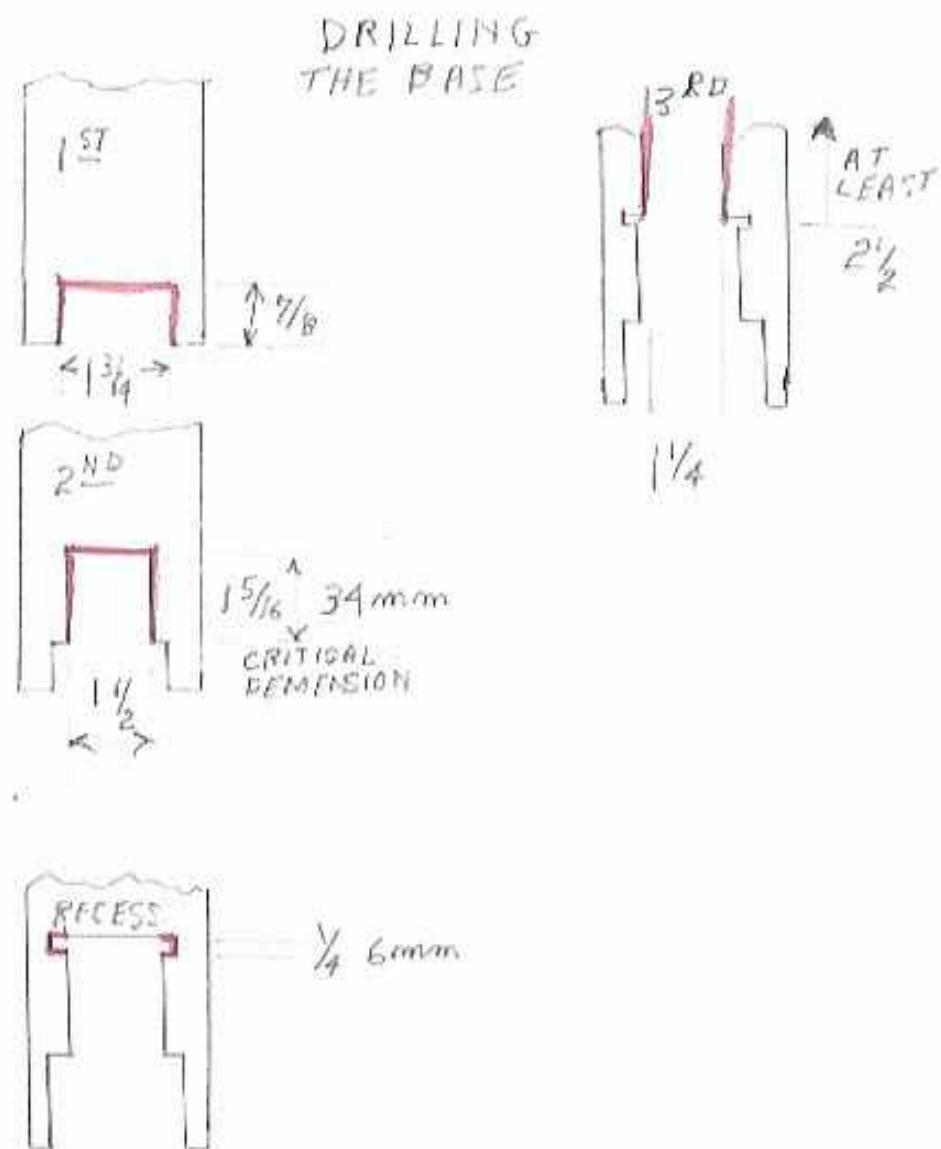
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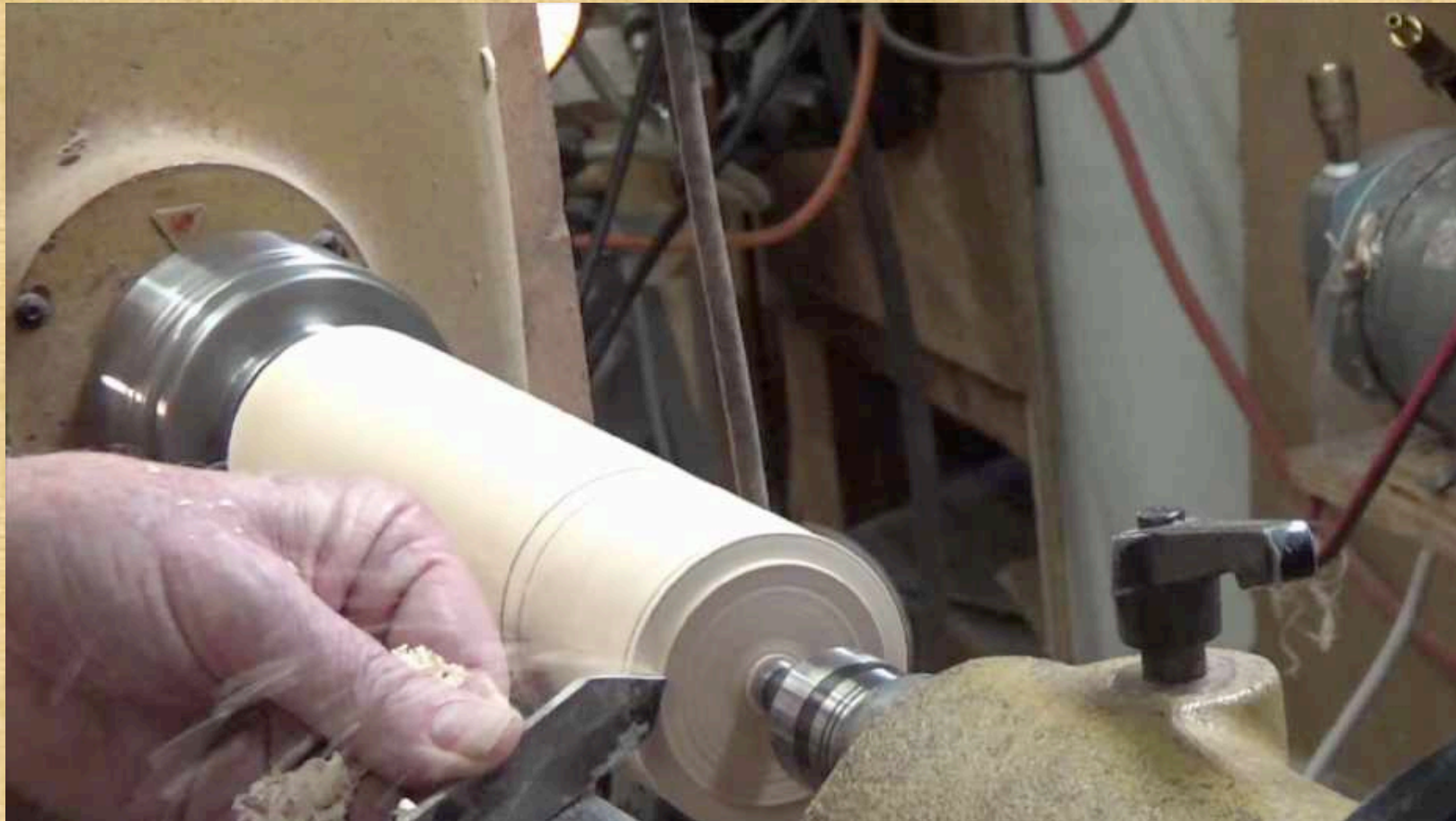
Mill Layout



Drilling the Body

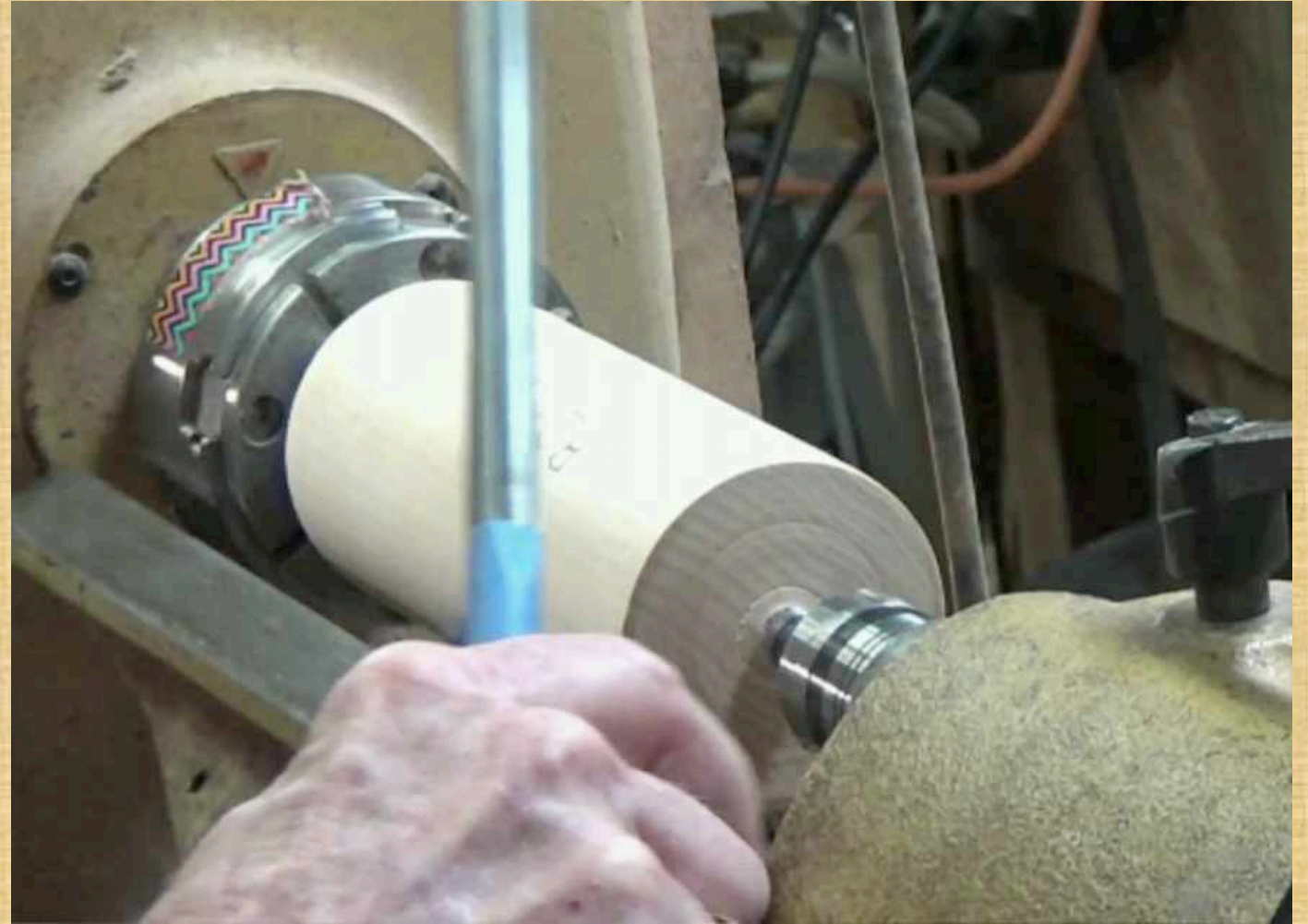


Preparing Blank



- Make tenons
- Part off

Mount Body and Faceoff



First Body Hole

1 3/4 Diameter

3/4 Deep not critical



250 – 350 rpm when drilling

Second Body Hole

1 1/2 Diameter

1 5/16 Deep
critical dimension



250 – 350 rpm when drilling

Cut Body Recess

1/4" Wide

1/16" Deep



800 - 900 rpm

Drill Body Hole

- Start with 1 ¼ bit
- Add extension
- Drill to within one bit length of body top



250 – 350 rpm when drilling

Drill Hole for Spigot

- Reverse onto pin jaws
- Drill spigot hole (I use 1 ¼ " but could be different if design dictates)



250 – 350 rpm when drilling

Remove Body Tenon



Open Bottom End

Body is reversed and cone center used to align piece

Skew used to open hole

Provides access to adjustment knob open to about 2"

Sand and Finish



Shape Body

Make wooden drive

Use cone drive center



In Summary: For Body

- Mount body in compression jaws
- Drill 1st body hole: 1 $\frac{3}{4}$ " Dia. About $\frac{3}{4}$ " deep
- Drill 2nd body : 1 $\frac{1}{2}$ " Dia. 1 $\frac{5}{16}$ " (34 mm) deep – a critical dimension
- Cut recess $\frac{1}{4}$ " X $\frac{1}{8}$ "
- Start 3rd body hole 1 $\frac{1}{4}$ Dia. About 1 inch deep
- Add extension and continue 1 $\frac{1}{4}$ hole to within one bit length of top
- Reverse on pin jaws and drill 1 $\frac{1}{4}$ " hole to complete body cavity
- Remove tenon
- Reverse on pin jaws and open body bottom to about 2 "
- Mount body between wooden jam chuck and cone center to shape body

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Form Spigot on Mill Top

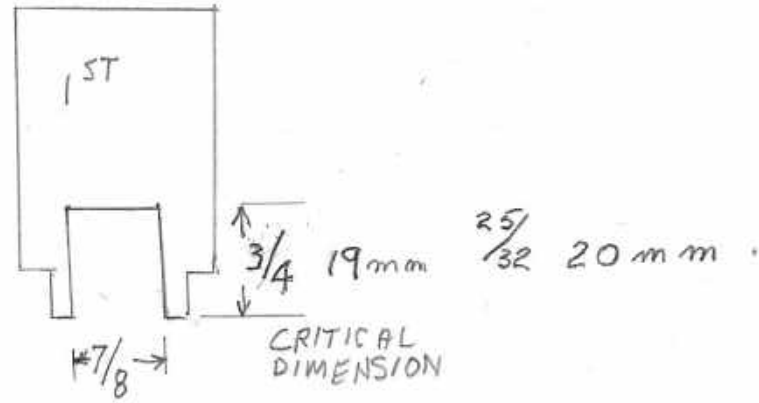
Match hole in Body

3/8 " Deep

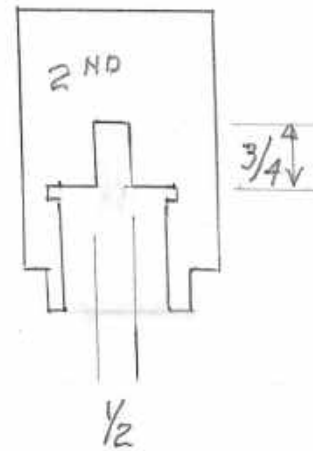


Drilling the Top

DRILLING
THE TOP



CUT $1/4$ RECESS



Drill Top Holes and Cut Recess

First hole

$\frac{7}{8}$ " Diameter

$\frac{3}{4}$ " Deep; critical
dimension

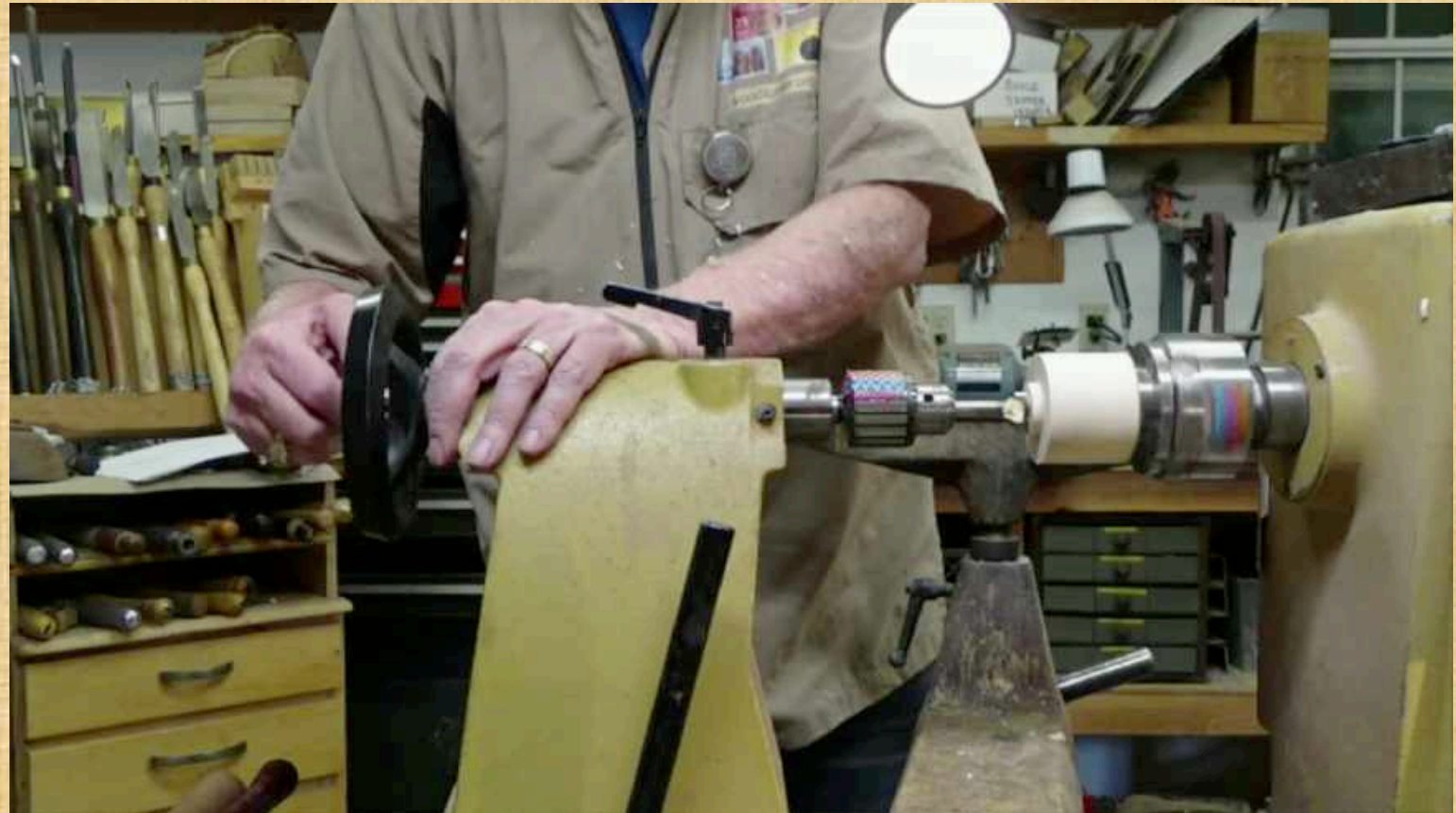
19 - 20 mm Deep

Cut Recess (800 – 900 rpm)

Second Hole

$\frac{1}{2}$ " Diameter

$\frac{3}{4}$ " Deep; not critical



250 - 350 rpm when drilling

Reverse Top to Shape

If top is to be independent of Body, reverse to shape top.



Shape Body and – Body Integral to Top

Chuck top and body
between wooden jam
chuck and tail stock cone



Summary: Mill top

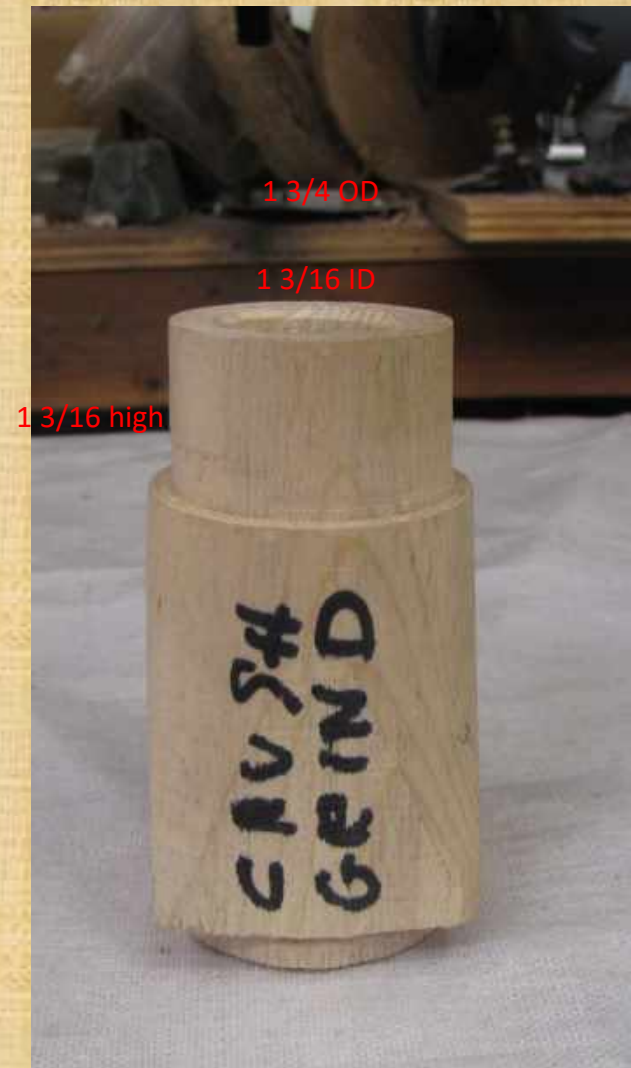
- Mount top in compression jaws
- Turn spigot to match hole in body – 1 ¼ “ Dia. 3/8 “ deep
- Then drill first hole: 7/8” Dia. ¾ to 15/32 X 1/8 deep 19-20 mm
- Cut ¼ X 1/16 recess
- Drill ½” hole ¾” deep

Insertion Tools



Spigot

OD Just under $1 \frac{3}{4}$ "
ID $1 \frac{3}{16}$ "
Length $1 \frac{3}{16}$ "



Inserting grinder

Use lathe as press

We will complete process live



Thank You Any Questions

- If you need help
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